DOCUMENT RESUME

ED 352 468 CE 062 562

AUTHOR Schmidt, B. June; And Others
TITLE Helping Teachers To Understand Their Roles in Integrating Vocational and Academic Education: A Practitioner's Guide.
INSTITUTION National Center for Research in Vocational Education, Berkeley, CA.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE Dec 92
CONTRACT V051A80004-91A
NOTE 31p.
AVAILABLE FROM NCRVE, Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455 (order no. MDS-276: $2.)
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Education; Administrator Role; Change Agents; Change Strategies; Classroom Techniques; Curriculum Development; Educational Administration; *Educational Change; Educational Cooperation; Educational Research; Educational Strategies; *Integrated Curriculum; Interviews; Secondary Education; *Teacher Role; Teaching Methods; *Vocational Education; Vocational Education Teachers

ABSTRACT

This guide is designed to help the educational practitioner understand more fully how teachers fulfill their roles in integrating vocational and academic education. A description is provided of the field study during which more than 100 teachers, counselors, principals, and administrators were interviewed at 10 school sites using the Behavioral Event Interview (BEI) to explore behaviors, thoughts, and feelings of particular events both when teachers were effective in integrating vocational and academic education as well as when the interviewee would have changed what had been done. It discusses how a write-up was prepared for each event and information from write-ups was analyzed and grouped according to major themes and subthemes. The major section of the guide contains discussion and summary statements related to teachers' roles in integration drawn from the write-up analyses. Roles are described from the perspective of four major themes: faculty cooperation, curriculum development, instructional strategies, and administrative practices and procedures. The comments within each theme, arranged by subthemes, provide an easily accessible reference for educational practitioners in various stages of implementing integration; characterize roles that academic and vocational teachers must fulfill to achieve the integration successfully; and link the roles of teachers with administrators' practices needed to support these roles. A final section summarizes the stages of integration within the three themes and teachers' roles within those stages. (YLB)

ED352468

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

NCRVE

National Center for Research in Vocational Education

University of California, Berkeley

HELPING TEACHERS TO UNDERSTAND THEIR ROLES IN INTEGRATING VOCATIONAL AND ACADEMIC EDUCATION: A PRACTITIONER'S GUIDE

BEST COPY AVAILABLE

Supported by
the Office of Vocational and Adult Education,
U.S. Department of Education

CE 062 562

This publication is available from the:

National Center for Research in Vocational Education
Materials Distribution Service
Western Illinois University
46 Horrabin Hall
Macomb, IL 61455

800-637-7652 (Toll Free)

HELPING TEACHERS TO UNDERSTAND THEIR ROLES IN INTEGRATING VOCATIONAL AND ACADEMIC EDUCATION: A PRACTITIONER'S GUIDE

B. June Schmidt

Curtis R. Finch

Susan L. Faulkner

Virginia Polytechnic Institute and State University

National Center for Research in Vocational Education
University of California at Berkeley
1995 University Avenue, Suite 375
Berkeley, CA 94704

Supported by
The Office of Vocational and Adult Education,
U.S. Department of Education

December, 1992 MDS-276

CE062562

FUNDING INFORMATION

Project Title:	National Center for Research in Vocational Education
Grant Number:	V051A80004-91A
Act under which Funds Administered:	Carl D. Perkins Vocational Education Act P. L. 98-524
Source of Grant:	Office of Vocational and Adult Education U.S. Department of Education Washington, DC 20202
Grantee:	The Regents of the University of California National Center for Research in Vocational Education 1995 University Avenue, Suite 375 Berkeley, CA 94704
Director:	Charles S. Benson
Percent of Total Grant Financed by Federal Money:	100%
Dollar Amount of Federal Funds for Grant:	$5,918,000

Disclaimer:

This publication was prepared pursuant to a grant with the Office of Vocational and Adult Education, U.S. Department of Education. Grantees undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view of opinions do not, therefore, necessarily represent official U.S. Department of Education position or policy.

Discrimination:

Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title IX of the Education Amendments of 1972 states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." Therefore, the National Center for Research in Vocational Education project, like every program or activity receiving financial assistance from the U.S. Department of Education, must be operated in compliance with these laws.

TABLE OF CONTENTS

Purpose and Overview 1
The Field Study 3
Teachers' Roles in Integration 4
- Faculty Cooperation 4
- Curriculum Development 9
- Instructional Strategies 12
- Administrative Practices and Procedures 15

Viewing Teachers' Roles within Stages of Integration 20
Summary 23
References 25

PURPOSE AND OVERVIEW

The integration of vocational and academic education is not only becoming a widely accepted educational reform, but it is also a required component of vocational programs that are to receive federal funds appropriated under the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. Among the purposes of this integration are the need to improve students' basic academic skills and to strengthen both vocational and academic coursework so that it is more meaningful for students. Integration involves making vocational courses stronger academically and making academic courses more applied and relevant. Further, it involves instruction in vocational classes that reinforces that of academic classes and vice versa (Schmidt, Beeken, & Jennings, in press). Through the inherent teacher collaboration required to achieve the integration, teaching excitement, and students' responsiveness to learning can increase.

Through site observations at various schools, Grubb, Davis, Lum, Plihal, and Morgaine (1991) identified eight basic models for integrating vocational and academic education. These models include varying degrees of integration, which can be described as fitting a five-stage hierarchy. The first level of the hierarchy is characterized as the "basic infusion" stage. Schools at this level are attempting to improve the academic skills of students by incorporating academic content into vocational courses.

Schools at the second level of the hierarchy are at the "advanced infusion" stage. These schools have vocational and academic teachers working together to integrate academic skills into vocational classes. "Applied academic" courses serve as the common vehicles for achieving integration at the third stage of the hierarchy. At this stage, the curricula for vocational education are left intact, while the curricula for academic education are modified to incorporate vocational applications. Courses at these schools include such offerings as applied mathematics; applied communications; applied biology; and principles of technology, an applied physics course. "Curriculum alignment" is the distinguishing feature of schools at the fourth stage of the integration hierarchy. These schools rely heavily on teacher collaboration to modify both the vocational and academic curricula. Vocational and academic classes are designed to reinforce one another, both laterally and sequentially.

"Restructured schools" are at the fifth or highest stage of the hierarchy. The first kind of restructured school is the academy model school where the academy operates within a school. Generally, an academy is composed of four teachers working together to form a curriculum around a vocational speciality—for example, business, electronics, automotives, or health. A second restructured school model is an occupational high school, often referred to as a magnet school. These schools may focus on a single occupational area and provide both vocational and academic preparation for students enrolled. Schools organized around occupational clusters, career paths, or occupational majors are a third restructured school form. Occupational clusters cut across conventional vocational and academic departments. With this approach, teachers are assigned to occupational clusters and collaborate to achieve integration at both the program and course levels. These three types of restructured schools depend on close alliances with the business community

Many of the individuals we interviewed described how vocational and academic teachers changed from their traditional curriculum development patterns to new ones focused on vocational teachers reinforcing academic skills and academic teachers using applied instructional procedures. Further, we noted that vocational and academic teachers at the various school sites we visited were actively collaborating with one another as they provided instruction to students. The extent of collaboration ranged from what Grubb et al. (1991) described as model one at the first level of the hierarchy, where more academic content is incorporated into vocational classes, to model eight at the highest level of the hierarchy, where occupational clusters replace traditional vocational and academic departments. Central to the collaborative instruction was teacher teamwork. Were it not for the emphasis on teamwork, the teachers probably would not have been so involved in the integration process.

The purpose of this guide is to help the educational practitioner understand more fully how teachers fulfill these roles. To do this, the guide views the behavior of teachers in the integration process from the perspective of four major themes: faculty cooperation, curriculum development, instructional strategies, and administrative practices and procedures. For each of the themes, specific ways to help teachers understand their roles in integrating vocational and academic education are identified. The themes evolved from interviews completed at school sites that have exemplary integration efforts underway.

Educational practitioners can use information from this guide to help individual teachers, to help small groups of vocational and academic teachers working together, or as a resource for group meetings of teachers. Further, the guide can serve as an excellent resource for teacher educators working with both preservice and inservice teachers to help them understand the roles of teachers in the integration process.

THE FIELD STUDY

More than one-hundred teachers, counselors, principals, and administrators were interviewed at the ten school sites, which were selected from more than thirty-five site nominations. Criteria for selecting the sites included geographic representation; school setting, including urban, suburban, and rural settings; school type, including comprehensive high schools, full-time vocational schools, and vocational centers with feeder schools; and extensive telephone contacts to assure that the school sites selected were at advanced stages of integrating vocational and academic education. Further, standards were used during the school site selection process to ensure adequate enrollment in vocational programs and availability of appropriate interviewees.

A major component of the face-to-face interview process used with the more than one-hundred study participants was the Behavioral Event Interview (BEI). Developed by McClelland and colleagues and described in *The Guide to Behavioral Event Interviewing* (McClelland, 1978), the BEI allows the interviewer to explore the behaviors, thoughts, and feelings of a particular event. During each interview, the interviewee was first asked to recall a specific situation or a specific time when the interviewee and others (both vocational and academic teachers) were particularly effective in integrating vocational and academic education. The interviewee was asked to give attention to the roles of both vocational and academic teachers in this event. Next, the interviewee was asked to recall another event when, as a result of hindsight, the interviewee would have changed what had been done. Again, the interviewee was asked to recall the roles of both vocational and academic teachers in the event.

After each interview was conducted, a one- to two-page write-up was prepared for each event. The write-up was prepared in first person and read like a story. The purpose of the write-ups was to organize and present the interview transcripts in an understandable

sequence and format. Also, the write-ups provided the researchers with meaningful information that had been carefully organized to better facilitate analysis and coding. Information contained in each write-up was sequenced to include the "situation," "who was involved," "behaviors/thoughts/feelings," and "outcome."

This write-up process generated numerous pages of event text. To facilitate organization and analysis of the information compiled, the computer software program *The Ethnograph* was used. It enabled the researchers to code, group, recode, and regroup information according to major themes and accompanying subthemes that emerged. A more detailed description of the field study process is presented in a companion report (Schmidt, Finch, & Faulkner, 1992).

TEACHERS' ROLES IN INTEGRATION

This section contains discussion and summary statements related to teachers' roles in integration drawn from the write-up analyses. Roles are organized by themes and subthemes. The themes progress from faculty cooperation and curriculum development efforts to instructional strategies that foster a climate for achieving the integration of vocational and academic education and are reflected in a fourth theme, administrative practices and procedures. Each theme and subtheme is addressed from a positive viewpoint, thus enabling the user of this guide to focus on particular teacher actions and roles that are associated with integration.

Faculty Cooperation

Based on our examination of the events, we noted that integration proceeds in stages. An initial stage in the integration process is for vocational and academic teachers to establish collaborative relationships with one another. These relationships often begin with the teachers simply learning about one another, offering to help or asking for help from one another, or providing inservice development activities for one another. At the next stage, vocational and academic teachers begin planning together and sharing information about their students and what the teachers teach. At the more advanced stages of faculty cooperation, the vocational and academic teachers assist with one another's instruction,

which might include team teaching; they carefully dovetail instruction between courses; and they manage to coordinate instructional scheduling for the dovetailed instruction. Strategies that facilitated faculty cooperation for each of the nine subthemes of this theme are addressed here.

Learning about One Another

A common pattern prior to the integration efforts at the sites was for the vocational and academic teachers to have little interaction with one another and limited knowledge of what others taught. Further, when the vocational and academic teachers first met together, they sensed that change was imminent and reported having feelings of hostility toward one another. However, as the teachers started to learn more about the goals of the integration efforts and more about one another, they became more open-minded and began to set the stage for collaborative relationships to develop. Further, they came to realize that they needed one another's help to improve the instruction their students were receiving. Thus, lines of communication between vocational and academic teachers need to be used extensively at the start-up stage of integration with opportunities for teachers to learn what others teach and how the goals of the integration efforts about to be implemented would affect them.

Offering To Help/Asking for Help

A basic step in vocational and academic teachers working together is for them to be able to offer help to one another as well as ask for help from one another. For example, a math teacher interviewed went to the agriculture teacher to seek help with providing more relevant instruction. In other instances, vocational teachers loaned equipment and supplies for use in an applied mathematics class and a principles of technology teacher was working with a physical science teacher to share equipment. However, feelings of intimidation on the part of vocational teachers can often keep them from asking for needed help, and academic teachers sometimes did not know how to approach the vocational teachers when they were both offering and seeking help. Use of role-playing situations with teachers at the start-up stages of integration enables them to simulate experiences they might encounter when asking for help from or offering to help other teachers. These situations can facilitate teachers gaining an understanding of how to be effective in these roles.

Instructing One Another

The interviewees reported instances where the academic teachers instructed the vocational teachers, where pairs of vocational and academic teachers instructed other teachers, and where vocational teachers instructed other teachers. Some instances where the teachers instructed one another were more successful than others. When difficulties arose, they were often the result of a lack of knowledge about the context of the other's instruction. For example, an English and a business teacher worked together to provide two workshops on reading in the content area, one to teachers at a high school and one to teachers at a career center. They noted that they should not have conducted the workshop at the career center in the same way as at the high school. In remembering the experience, the English teacher noted that they should have used examples from instruction provided by the vocational teachers at the career center. Teachers can definitely learn from one another. However, teachers providing instruction or inservice activities for other teachers need to have a knowledge of the instructional content, strategies, and environment of the teachers they are to instruct.

Planning Together

At all ten schools visited, the interviewees gave examples of experiences the vocational and academic teachers had in planning together. At initial stages of planning the most frequently expressed feelings were negative. The vocational teachers felt they were being asked to make more substantive changes than the academic teachers. Further, they often questioned the need for the changes. The academic teachers, on the other hand, did not have knowledge of how many of the skills they teach are used in the workplace. As the planning process evolved and the teachers gained ownership in the plans, the negative feelings waned and the focus of the teachers' attention became the projects and activities they were planning together.

Providing teachers with time away from their daily routine was a major factor in their successfully planning together. However, in the day-to-day school setting, teacher schedules that allowed for joint planning were helpful. Prior to starting to plan together, both vocational and academic teachers need to gain an understanding of why changes in the instruction they provide are needed. Further, they need to have the opportunity to plan for change in a friendly environment away from the day-to-day hassle of their regular teaching schedules.

Sharing Information about Instruction

Sharing information about instruction was a common subtheme that surfaced during interviews at most of the schools. Much of the sharing had to do with learning about specifics of what others teach. The vocational teachers seemed to need help in being able to communicate with others just what their instruction involved and the level of academic capability students need to succeed in their programs. Further, when sharing information about instruction, both vocational and academic teachers need to be able to do so tactfully. Sharing information about what they teach serves as a first stage in teachers coordinating their instruction. For instance, through this sharing, the vocational teachers often learned that the way they were teaching particular academic skills was different than the way the academic teachers were teaching them and vice versa. Both vocational and academic teachers indicated that they found out about better ways to teach through this sharing process.

Sharing Information about Students

Several of the interviewees discussed instances where sharing information about students was a factor in implementing the integration. We learned that the vocational teachers tended to need help from the academic teachers with problems the students were having in learning academic skills, while the academic teachers tended to call on the vocational teachers for help with discipline problems. Both vocational and academic teachers spoke positively with regard to sharing information about students. Further, a counselor reported on the success of parent-teacher conferences when vocational and academic teachers worked together to share information about students with their parents. Thus, students can serve as a positive influence in establishing a climate for the integration of vocational and academic education. Teachers, however, need to learn how to share information about students in a positive context and in a context that strengthens the integration outcomes.

Assisting with Others' Instruction

Both vocational and academic teachers provided examples of assisting one another with instruction and with receiving assistance from one another. The teachers who worked together felt that giving students the impression that teachers supported one another and functioned as a team was important. When changes in a school were occurring as a result of integration efforts underway, the teachers felt that it was important to present a united

front to the students. The support may be as simple as two teachers agreeing to teach grammar rules at the same time or as involved as two teachers discussing daily just what they will be teaching the next day to be sure they are reinforcing what the other is teaching. However, in assisting one another with instruction, the teachers had some negative experiences when they went beyond the bounds of knowledge with which they were familiar. For example, when math teachers helped business teachers with mock interviews, the students became upset because they realized the math teachers were not experts on job interviewing skills. Thus, assisting other teachers with instruction must be done within the context of the teacher's expertise. At the outset of integration efforts, teachers could benefit from simply discussing and setting guidelines for how they will assist one another with instruction.

Dovetailing Instruction

As integrated activities between vocational and academic classes developed, the teachers realized that they needed to dovetail their instruction so they were reinforcing one another. Dovetailing instruction involves the teachers being sure that academic skills are approached the same way by both vocational and academic teachers. Failure to carefully coordinate or dovetail instruction led to problems for both vocational and academic teachers. Teachers who had planned coordinated projects between vocational and academic classes sometimes learned that students received contradictory information in the classes of the other teacher. Successful integration depends on teachers being able to agree on what they will teach, how they will teach it, and when it will be taught.

Scheduling Coordinated Instruction

When projects and assignments in vocational and academic classes were coordinated as part of teaching a class, we learned that scheduling for the instruction and meeting deadlines became critical. Both vocational and academic teachers noted difficulties they encountered when attention to scheduling was lacking. Further, vocational teachers noted that they needed academic teachers to teach specific topics or material prior to the students using the information in the vocational classes. The integration process requires that teachers schedule instruction as needed to reinforce information provided in other teachers' classes. Scheduling that instruction is sometimes different from past practice.

Curriculum Development

The second stage of the integration process that our interviews enabled us to identify was one of vocational and academic teachers working together on various curriculum development efforts. These were undertaken at the class level between two teachers for relatively short instructional periods for one or more students to elaborate projects that involved all of the vocational and language arts teachers from grades nine through twelve. The teachers we interviewed described how they made curriculum decisions, how they planned what and when to teach, and how they encountered and resolved problems of aligning vocational and academic curricula. Success in aligning curricula was heavily dependent on the teachers communicating with one another.

Curriculum development efforts frequently required that both vocational and academic teachers change from past instructional patterns, patterns that had at times been in place for years. Once the changes were implemented, even teachers who resisted tended to become proponents of the new integrated curriculum—a curriculum that called for vocational teachers to reinforce academic skills and for academic teachers to use applied instructional procedures. Not only did the curriculum development efforts involve the two types of teachers, but they also resulted in the teachers involving individuals from business and industry to provide input and resources for enhancing the new instructional activities. Strategies that proved effective in curriculum development are described under the six subthemes that follow.

Coordinating Assignments/Projects/Instruction

The interviewees found that successful integration required that teachers plan curriculum together to assure coordination of assignments, projects, and instruction between vocational and academic classes. When two teachers coordinated assignments that naturally fit together, the outcomes were positive. However, the teachers also reported coordinating assignments that did not naturally fit into their instruction and finding such efforts superficial and of little benefit to the students. Thus, when vocational and academic teachers are coordinating assignments, they must first identify topics to coordinate that are beneficial to the students in both types of classes. Further, when coordinating assignments that involve many teachers, someone must be designated as a coordinator for the effort. For example, a project that involved students gathering information in their vocational classes for assignments in English had to be carefully scheduled or the English classes

became disorganized. Further, specific information the students were to gather had to be agreed upon and the exact nature of it understood by all vocational teachers.

Planning Meetings

Vocational and academic teachers worked together in a number of different settings to plan the integration of vocational and academic education. Meetings that involved small numbers of teachers, from two to five, tended to be viewed more favorably by the teachers than when larger groups met. Projects and activities planned when two to five teachers met included using tables of content and indexes, planned by a metals and a language arts teacher; income tax form preparation, planned by a business and a mathematics teacher; helping four-year olds in a child care program write stories, planned by an applied communications and home economics teacher; and using science applications planned by a construction and a physics teacher. Projects and activities of this nature that can be planned by small groups of teachers are limitless. Outcomes of these activities were viewed positively by the teachers.

When teachers participated in more formal meetings with larger groups of teachers involved in the planning, difficulties were more likely to surface. We learned of these situations at five of the school sites we visited. Not all of the comments we received about planning that took place in the larger groups were negative, however. When larger groups worked together to plan projects and activities, they needed adequate time to do so and they needed someone to serve as a facilitator to the planning process who approached the effort with a positive attitude.

Aligning Curriculum

In developing curriculum, both the vocational and academic teachers we interviewed noted the importance of aligning their curriculums with one another. The vocational teachers worked to imbed academic content in their classes that reinforced that taught by the academic teachers. The academic teachers, likewise, gave instances of how they adjusted to the content of the vocational classes. These efforts took many forms. At one school, a curriculum writing team focused on developing ideas for teaching specific skills in every class. They had the ideas typed up and then picked common times for emphasizing the skills. For example, during the third week of instruction, all teachers emphasized study skills with the students.

Changing from the Past

The integration of vocational and academic education at the sites we visited required changes from past procedures in both program offerings and in class instruction. A common pattern was for the vocational teachers to resist the changes initially then to move toward acceptance and support of them. One reason for the resistance on the part of the vocational teachers could be that the changes seemed to affect them more than the academic teachers. The vocational teachers often felt that they had been quite successful in the way that they were teaching and questioned the need for change. Both vocational and academic teachers need to understand the changing skill requirements of the workplace and how the skills can be incorporated into their instruction. An integration climate that supports strengthening vocational programs through providing instruction that reinforces skills students need today is essential. Changes were particularly difficult for some vocational teachers when the specific programs they offered were changed to broader, cluster type offerings.

Enhancing Curriculum through Involvement with Business/Industry

Through the interviews, we learned that integration involved the use of input from the business community for the purpose of enhancing curriculum. Both teachers and students went on field trips to businesses, and individuals from the business community came to the school sites where they served as guest speakers and advisory committee members. The purpose of the interaction with the business community was, for the most part, to seek reinforcement for the need of basic academic and workplace instructional skills. One way, however, that individuals from the business community proved to be particularly helpful was in assisting teachers with instruction related to job interviewing skills.

Developing/Designing Projects

At five of the school sites, vocational and academic teachers had cooperatively developed projects that resulted in the integration of their curriculums. Some of the projects were quite elaborate and required extensive commitment on the part of the teachers. Further, the project activities, although difficult at times to implement, were not viewed negatively by the interviewees, indicating that such activities are a viable method for successfully achieving the desired integration of vocational and academic education. The projects did, however, require give-and-take negotiations on the part of both vocational and

academic teachers. Further, adequate planning time for such projects is essential. One principal indicated that a senior project would have gone even better if it had been planned this year and initiated next year.

Instructional Strategies

At the instructional stage, vocational and academic teachers approached integration through the use of a variety of strategies. The strategies included teaching as teams, approaching instruction through application, teaching cooperatively using community people and resources in instruction, accepting student-initiated instruction, and using common teaching strategies. Vocational teachers noted how they included academic skills in their instruction, while academic teachers noted how they reinforced vocational learning in their instruction. Further, integration was achieved through student-initiated instruction and instruction provided by individuals from the business community. Instructional strategies under the six subthemes that follow helped establish a positive climate for achieving the integration of vocational and academic education at the school sites we visited.

Teaching as Teams

The vocational and academic teachers came together in a variety of team combinations to teach students. The combinations included a mathematics and mechanics teacher, an English teacher and business teacher, and an English teacher and metals teachers. Generally, the team teaching took place in vocational class settings. In describing how team teaching took place, a mathematics teacher noted that when teaching students how to calculate resistance, the auto mechanics teacher worked with students on resistance in their labs at the same time that the mathematics teacher covered the calculations related to the concept. The students thus had their theoretical learning reinforced with application and their application learning reinforced with the theoretical concept. Another example of effective team teaching was initiated because of concern about the lack of job interviewing skills among the auto mechanics students. This event, which featured role playing by both the auto mechanics teacher and the English teacher, took place in the English class. Numerous possibilities exist for vocational and academic teachers to work together as teams in the delivery of instruction. They do, however, need the opportunity to explore and plan together how their students can benefit from team efforts on their part.

Approaching Instruction through Application

Academic teachers were particularly excited about approaching instruction through application or the use of hands-on learning. One science teacher noted that before the integration efforts at the school site, a typical approach was to introduce students to principles and concepts first and then have them apply them in their labs. Now when teaching something like exponents, this teacher starts by first showing the students how they will use them in their experiments, then the concept of exponents is taught. This teacher finds this teaching procedure more effective. Further, an auto mechanics teacher noted that students were assigned to write a business letter as a representative of an insurance company who had found safety violations in an auto repair business. This teacher found this assignment more effective for teaching safety rules than the previously used procedure of discussing and demonstrating safety violations. For the applied approach to be successful, teachers must be willing to change from past instructional procedures. They must also learn to assess the outcomes of the new instruction carefully and to use applied approaches only when effective.

Teaching Cooperatively

The majority of the events coded under the theme of instructional strategies were further coded under the subtheme of teaching cooperatively. Examples of teaching cooperatively included making joint assignments, grading joint assignments, and teaching units at the same time. For example, business, mathematics, and accounting teachers worked together to teach students how to prepare income tax returns. In other instances, business teachers cooperated with English teachers to help students learn writing and report preparation skills. In another example, a government teacher worked with an auto mechanics teacher. The auto mechanics teacher came to the government instructor's class to discuss strategies for buying cars as a way of reinforcing various aspects of effective consumerism being studied in the government class. The government teacher noted that the students had respect for the experience base and knowledge that the auto mechanics teacher had and that the aspects of consumerism that were discussed served as the basis for continued development of the students' consumerism skills. In teaching cooperatively, the teachers must be careful that they know what is being taught by teachers they are cooperating with. Further, they must be willing to negotiate so that differences as to how things are taught will be resolved prior to the actual delivery of instruction.

Using Community People/Resources in Instruction

In various instances, comments about the use of community people and resources to enhance integration efforts surfaced. These included an English teacher who involved students with writing activities that were community focused. Further, this teacher involved vocational teachers and students in community projects such as having them interact with first-grade students who came to the school as part of a special English writing assignment. An agriculture teacher explained how a technician from a local fish hatchery enhanced instruction in class, and a principal noted that presentations made by business people at the school were well-received by teachers and students. Thus, carefully planned use of community people and resources can facilitate the integration process.

Accepting Student-Initiated Instruction

In a few events, the interviewees shared information about how students initiated an integration process. In one example, a student worked with four different teachers in writing one paper: the English teacher, biology teacher, agriculture teacher, and computer teacher. When the student realized that the English term paper he was preparing could be used for his other classes, he approached the teachers to see if they would accept the paper in their classes, as well. In this instance, the teachers respected one another enough to accept the work that was being done in part for other classes. Further, the student was able to deal with the topic of the paper in more depth than would have been possible for the English class alone. The principal noted this as a classic example of integration. In other instances, students helped teachers with teaching difficult concepts; for example, a vocational student who had already learned a math concept in an auto mechanics class helped the math teacher explain the concept to other students. Teachers need to recognize instances when vocational and academic education can be integrated through efforts initiated by students.

Using Common Teaching Strategies

In several instances, we found that teachers changed previous teaching strategies so that they would be common with those taught by counterpart vocational and academic teachers. A mathematics teacher noted that she used the industrial arts teacher's approach to teaching rulers, and an English teacher told how she helped an auto mechanics teacher with a writing assignment. The key to the teachers using common teaching strategies was for them to accept the fact that more than one way exists for teaching. Once the teachers

realized as a result of sharing information with one another that more effective strategies for teaching some things existed than the ones they used, they were more than willing to change. Where successful integration occurred, the teachers found that their emphasis was on helping their students learn and *not* on being committed to teaching certain things in certain ways.

Administrative Practices and Procedures

Although administration can be perceived as being quite remote from teachers' roles in the integration process, administrative practices and procedures in the schools we visited appeared to have much impact on these roles. Numerous instances of administrative activity were identified that could be linked to integration. Most events related to this theme were provided by principals and other administrators. However, during their interviews, some teachers discussed administrative practices and procedures from their professional perspectives. Many of the events related to administration were either quite positive or ended on a positive note. Some comments, however, indicated that administrative processes might be modified to improve the integration of vocational and academic education. Positive comments related to administrative practices focused on facilitating the integration process, living with administrative constraints, addressing teacher concerns, and learning from experience. Further, negative issues related to scheduling and class organization, dealing with teacher resentment toward change, involving teachers in the integration process, and providing administrative support were discussed by the interviewees. Strategies administrators can use to enhance the integration process are discussed under the eight subtheme headings that follow.

Facilitating the Integration Process

Administrators in the schools we visited facilitated the integration of vocational and academic education in a variety of ways. One of the most common approaches administrators used was team building. Vocational and academic teacher teams often began as committees. Administrators seemed sensitive to the need for a variety of teachers serving on the committees and thus identified and selected committee members from both vocational and academic sectors of the school. The team-building process could take many forms. After working with teachers on integration for a period of time, one principal dissatisfied with progress decided to link professional development activities with the

establishment of a teacher team. The charge the principal gave the team was to come up with significant integration activities that they could implement. Administrators also organized professional development activities for teachers at the school site and across the school district. One of the most powerful ways of providing professional development was for teachers to teach teachers. In fact, in several instances, the administrators asked vocational and academic teachers to provide professional development workshops for other teachers in the school.

Administrators also facilitated the integration process through scheduling. This included student as well as teacher schedules. Sometimes even simple schedule changes paid off with great benefits for integration at a school site. In one instance, the principal scheduled the academic teachers for a planning period during one of the last two periods of the day, periods when most of the vocational teachers were free. This allowed a time when the teachers could benefit by sharing information with one another.

Another way that administrators moved toward implementation of the integration was through teacher empowerment. Some administrators seemed to recognize that opportunities needed to be provided for teachers to become the owners of the integration process. They tried to stay out of the implementation stage of integration as much as possible so that the cooperative integration efforts became ones that were owned by the teachers.

At times, however, administrators needed to give teachers specific assignments and prod them to move ahead with the integration. Although this approach may appear to be autocratic, the teachers did not rebel; and once involved with the integration activities, they expressed support for the activities. One vocational teacher noted that he asked himself, "Why me?" when first assigned to work on a committee. The teacher eventually began to enjoy the committee work and ultimately appreciated the opportunity to work with the English teachers on the committee. To be effective in supporting teachers in the integration process, administrators had to seize opportunities to facilitate the process whenever possible and, on occasion, even delegate responsibility for the integration to teachers through specific assignments.

Living with Administrative Constraints

When engaged in the integration process, administrators were sometimes burdened by constraints that originated from within and outside the school. Although administrators expressed concern about these constraints, they did not appear to be discouraged by them. Constraints ranged from logistics to meeting teacher and student needs. In fact, one administrator confided that the implementation of integrated programs was a condition of employment. Further, the teachers often recognized the constraints that the administrators had to deal with and helped the administrator work within the constraints to achieve the integration.

In one instance, a constraint that was faced regarded granting credit for applied courses. Although students at the school received credit for an applied English class, the credit did not count as an English credit toward graduation. In an effort to deal with this constraint, the administrator gathered information and set up a meeting with the superintendent of schools. The meeting went extremely well and the superintendent supported the proposal to grant credit. As a result, this constraint eventually vanished.

Personnel-related activities also emerged as a constraint. With regard to a newly hired teacher, one administrator admitted that difficulties emerged from a situation when proper action was not taken. A new teacher was scheduled to teach an applied communication course without receiving adequate help from the previous teacher. The administrator noted that a lot of ground was lost by his not supplying the leadership for a smooth transition of the course.

Administrators need to recognize constraints that impede the integration process. Once restraints are recognized, they must determine whether to live within the constraint and seek teacher support to do so or to confront the constraint with the goal of having it removed. Both lines of action require teacher support.

Addressing Teacher Concerns

Teacher concerns, though few in number, emerged as an additional factor that administrators needed to address in the integration process. These concerns involved students missing vocational classes when they were part of a pull-out academic system, coordination of projects that were being carried out in both vocational and academic classes, and teachers who felt threatened by the changes occurring as a result of the

integration efforts. Communication appeared to be a key factor in addressing teacher concerns. Often the concerns were rooted in lack of knowledge as to why things were being done the way they were. Administrators need to develop an awareness of teacher concerns and to communicate their knowledge of them to the teachers. The concerns can then be addressed to the extent possible and often disappear when teachers are better informed about the integration efforts underway.

Learning from Experience

Comments related to the subtheme of "learning from experience" indicated that some administrators were not fully prepared to deal with the complexities of integration. For example, one principal felt that a good job was being done with implementing integration and then found out that there were serious communication problems. The principal noted that he thought he was communicating because he considered himself a people person. Yet, he found that the teachers were not changing. At the start of the next academic year, he hired a speaker who talked about the necessity of change and of putting things behind you. After this session, the teachers moved forward with the integration process. Another principal commented that if he knew at the start what he later learned, he could have moved a lot faster on achieving interaction between the vocational center teachers and the high school teachers. Natural barriers between the two groups would have been more quickly eradicated and instruction changed much sooner.

Administrators need not experience the difficulties these administrators did, for they can learn from the experiences of others. Specific details of the integration differ from school to school; however, the overriding problems of implementing the integration activities are quite similar.

Scheduling and Class Organization

With regard to scheduling, a principal was quick to comment on how student scheduling was detrimental to the integration process. Inattention to scheduling resulted in many levels of math students in each business class, thus requiring the business teachers to coordinate with many different math teachers. The coordination could not be achieved because of conflicting class schedules of the math and business teachers. More careful scheduling of students enrolled in both the math and business courses, a primary focus of integration efforts at the school, would have greatly facilitated the efforts. At another

school site, the vocational teachers were particularly concerned about a pull-out system for students to attend academic classes during vocational class periods. The system resulted in chaotic vocational classes and in only selected students receiving the academic instruction. At another site, a counselor noted a problem that arose when vocational and academic clusters were formed. The same group of students were together for not only their vocational classes but also for their academic classes. Having the same students together so much of the time created problems with discipline, particularly in the academic classes where the students tended to vent disagreements that had started as a result of their being together so much.

Thus, administrators need to develop an awareness of problems that can arise as a result of class and student scheduling. For the integration efforts to run smoothly, teachers must also share with administrators any difficulties they encounter as a result of scheduling. Many scheduling problems can be resolved once they are identified and alternatives examined.

Dealing with Teacher Resentment

As the integration was initiated at the school sites, there was naturally some teacher resentment toward the process and how it was being administered. The resentment stemmed by and large from lack of knowledge on the part of the teachers as to just what to expect as a result of the integration efforts being implemented. An academic teacher noted that a great deal of confusion existed and the teachers did not know what they were expected to do from one day to the next. A principal commented that he was so blinded by this great new idea (integration) that he just thought everyone would want to jump in regardless of how much work was involved. Obviously, this was a naive assumption. Further, starting the integration efforts with one group of teachers, whether it was a vocational group or an academic group, tended to build resentment on the part of the other group. The key to helping teachers avoid feelings of resentment appeared to be open channels of communication and involvement of all teachers.

Involving Teachers

Some teachers that were interviewed felt frustrated about not being included in enough integration activities or not having enough time to work with other teachers. Time seemed to be an important teacher concern. As one teacher noted, she cannot change

curriculum by working with other teachers at the end of the day. A vocational teacher who had difficulty implementing any integration efforts noted that there it was February and the applied communications teacher and she had never had time to get together. The previous summer, the two teachers had planned an extensive cooperative project for their two classes, yet day-to-day time constraints kept them from moving forward with the project. Follow-up activities to summer workshops that focused on planning for the integration were essential. The teachers became frustrated when they invested time and effort in planning and then never had a chance to carry through with the plans. Administrators must develop an awareness of the need for time to change instruction and to help teachers identify time that they can use to plan and implement changes.

Providing Administrative Support

Interviewees commented on several problems related to the lack of administrative support for the integration. The teachers noted that when administrative support is not there for the needed changes, nothing happens. On the other hand, when the support is too autocratic, teachers rebel. As one teacher noted, the integration efforts needed a manager—an individual who had time to coordinate the integration activities being undertaken at the school. This individual needs to be someone who facilitates, not dictates, the integration process. For successful integration efforts, teachers must develop ownership in the changes taking place. This ownership is most quickly realized through use of democratic leadership principles.

VIEWING TEACHERS' ROLES WITHIN STAGES OF INTEGRATION

From interviews conducted with principals, other administrators, counselors, and teachers of vocational and academic subjects at the ten school sites, the four major themes featured in this guide emerged. The first three themes identify stages of integration and roles within the stages that teachers experience as they move from school settings where little or no integration exists to settings where extensive integration efforts are underway. Stages within the three themes, which move from cooperative efforts to curriculum strategies to instructional strategies, are summarized here.

Faculty Cooperation

- **Stage 1**

  For any integration activity to occur, vocational and academic teachers must first learn about one another. This knowledge then enables them to offer help to as well as ask for help from one another.

- **Stage 2**

  From initial offers of help and seeking help, more formal settings emerged where teachers became involved in instructing one another. The instruction, generally, focused on teaching one another about basic academic skills—as used in vocational settings and as taught in academic settings. This, in turn, evolved into teachers planning together, sharing information about instruction provided in their classes, and sharing information about students that they both had in their classes.

- **Stage 3**

  At this final stage of cooperative efforts, the teachers moved to assisting one another with instruction, carefully dovetailing their instruction, and coordinating the scheduling of instruction. Vocational and academic teachers approached the instruction of academic skills in the same way and were careful not to give students contradictory information on assignments. Further, the vocational teachers willingly rescheduled instructional sequences in their classes to reinforce what students were learning in academic classes, and vice versa.

Curriculum Development

- **Stage 1**

  Following on the theme of cooperative efforts, the teachers' integration efforts moved to developing curriculum. Here they worked together, often meeting over extensive periods of time, to plan coordinated assignments, projects, and instructional sequences. They noted the importance of aligning their curriculums at this stage.

- **Stage 2**

  Changing from past patterns, particularly when they led to instruction that was out of step with needs of today's students, evolved as an important stage in developing curriculum. Both program offerings and in-class instruction were changed as a result of the integration efforts.

- **Stage 3**

  At the most advanced stage of curriculum development, the teachers undertook the design and preparation of elaborate, extended projects involving coordinated and collaborative instruction. Further, they moved to enhancing the projects through input and participation from individuals in the business community.

Instructional Strategies

- **Stage 1**

  In the day-to-day instructional routine of their classes, the teachers found instances where they could readily integrate vocational and academic content. They were particularly enthusiastic about instances where the integrated efforts led them to focus on applications of academic skills. Further, they learned that students could initiate instances where vocational and academic content are integrated.

- **Stage 2**

  From recognizing instances for achieving the integration, the teachers moved to teaching cooperatively, including joint assignments, joint grading of assignments, teaching common content at the same time in their classes, and using common teaching strategies. Further, some of the vocational and academic teachers even moved to team teaching situations where they reinforced one another's instruction in the same classroom setting.

- **Stage 3**

  At the instructional level as well as at the curriculum development level the teachers found that their advanced integration efforts could be enhanced by using people and resources from the community.

Administrative Practices and Procedures

The fourth major theme of administrative practices and procedures can also be characterized in stages. The stages are, however, directed at actions of administrators that can help teachers assume roles outlined for them in the three previously discussed themes. The three stages of the administrative practices and procedures theme follow:

- **Stage 1**

  An initial strategy that administrators must pursue in implementing the integration of vocational and academic education is one of facilitating the process. Administrators

at sites where exemplary integration activities are underway provide team building and support activities that give teachers a feeling of comfort with the substantial changes they are undertaking. Further, the administrators openly address teacher concerns.

- **Stage 2**

  At this second stage, administrators moved to helping teachers understand administrative constraints they faced and gained teachers support for working within those constraints. Further, the administrators found they learned from experience, noting that they initially made mistakes which they later overcame. Providing and maintaining adequate and open communication was one area in particular where they noted that they learned from experience. Another area where administrators proved effective in facilitating the integration process was scheduling and class organization. Open communications with the teachers helped the administrators identify and resolve scheduling problems.

- **Stage 3**

  Critical to the success of the integration efforts was for teachers to feel confident of administrative support and to feel that they were involved in the integration process. Failure to meet these two expectations for all teachers on an ongoing basis quickly led to teacher resentment toward the changes. Thus, administrators were not only involved at initial stages of the integration but throughout the process.

SUMMARY

Based on our observations, it was quite clear that teacher collaboration in integrated school settings is quite different from the ways teachers collaborate in more traditional settings. Boyer (1983) perhaps captured best the traditional view of secondary schools in a comprehensive study of secondary education in America. In Boyer's study, it was noted that teachers of vocational and academic subjects rarely worked together toward common goals and more often than not had little comprehension of what other teachers were teaching. In contrast, our interviews captured rich descriptions of a wide range of cooperative activities in which both vocational and academic teachers were engaged. Additionally, vocational and academic teachers were very interested in what other

vocational and academic teachers taught and often functioned as members of professional teams as they integrated vocational and academic education.

This guide has presented a wide range of new roles teachers must assume as they create programs that truly integrate vocational and academic education. These roles were described from the perspective of four major themes: faculty cooperation, curriculum development, instructional strategies, and administrative practices and procedures. The comments within each theme, arranged by subthemes, provide an easily accessible reference for educational practitioners in various stages of implementing the integration of vocational and academic education. They characterize roles that teachers, both vocational and academic, must fulfill to achieve the integration successfully. Further, they link the roles of teachers with administrators' practices needed to support these roles.

REFERENCES

Boyer, E. L. (1983). *High school: A report on secondary education in America.* New York, NY: Harper & Row.

Grubb, W. N., Davis, G., Lum, J., Plihal, J., & Morgaine, C. (1991). *The cunning hand, the cultured mind: Models for integrating vocational and academic education* (MDS-141). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

McClelland, D. C. (1978). *Guide to behavioral event interviewing.* Boston, MA: McBer and Company.

Schmidt, B. J., Beeken, L. A., & Jennings, C. L. (in press). *Integrating vocational and academic education: Guidelines for secondary school principals.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Schmidt, B. J., Finch, C. R., & Faulkner, S. L. (1992). *Teachers' roles in the integration of vocational and academic education* (MDS-275). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.